

CLAIMS

1. An aqueous coating composition having a 60° gloss of ≤ 40 upon drying comprising a self-crosslinkable polyurethane obtained by the reaction of:

5 (A) an isocyanate-terminated pre-polymer formed from components which comprise

(i) 5 to 65 wt% of at least one organic polyisocyanate;

(ii) 0.1 to 6 wt% of at least one polyol containing ionic or potentially ionic water-dispersing groups, having two or more isocyanate-reactive groups and having a molecular weight in the range of from 100 up to 500 g/mol;

10 (iii) 0 to 30 wt% of at least one polyol containing water-dispersing groups, having two or more isocyanate-reactive groups and having a molecular weight in the range of from 500 to 6000 g/mol;

(iv) 10 to 80 wt% of at least one polyol containing crosslinkable groups, having two or more isocyanate-reactive groups and having a molecular weight in the range of from 150 to 6000 g/mol;

15 (v) 10 to 70 wt% of at least one polyol not comprised by (iii) or (iv) having two or more isocyanate-reactive groups and having a molecular weight in the range of from 500 to 6000 g/mol;

20 (vi) 0 to 50 wt% of at least one component not comprised by (i), (ii), (iii), (iv) or (v); where (i), (ii), (iii), (iv), (v) and (vi) add up to 100 wt%; and

where the NCO:OH ratio is in the range of from 1.1 : 1.0 to 10.0 : 1.0; and

(B) at least one active-hydrogen chain extending compound.

25 2. An aqueous coating composition according to claim 1 having a 85° gloss of ≤ 60 .

3. An aqueous coating composition according to anyone of the preceding claims containing $< 5\%$ by weight of flattening agent by weight of the self-crosslinkable polyurethane.

30 4. An aqueous coating composition according to any one of the preceding claims additionally comprising component (ia) 0 to 20 wt% of at least one organic polyisocyanate with an isocyanate functionality ≥ 2.2 , where (i), (ii), (iii), (iv), (v), (vi) + (ia) add up to 100 wt%.

35 5. An aqueous coating composition according to any one of the preceding claims wherein component (vi) comprises a polysiloxane polyol.

40 6. An aqueous coating composition according to any one of the preceding claims wherein the self-crosslinkable polyurethane has an average particle size in the range of from 500nm to 5000nm.

7. An aqueous coating composition according to any one of the preceding claims additionally comprising a reactive diluent.

8. An aqueous coating composition comprising:

I) 40 to 80 wt% of water;

II) 0 to 30 wt% of co-solvent;

III) 20 to 60 wt% of the self-crosslinkable polyurethane according to any one of claims 1 to 7;

IV) 0 to 10 wt% of hydrophobe modified ethylene oxide urethane;

V) 0 to 16 wt% of surfactants;

VI) 0 to 10 wt% of thickeners; and

VII) 0 to 3 wt% of alkyd drying agent, accelerator and/or activator;

where I), II), III), IV), V), VI) and VII) add up to 100%.

9. A coating obtained from an aqueous coating composition according to any one of claims 1 to 8.

10. A coated substrate having a coating comprising an aqueous coating composition according to any one of claims 1 to 8.

11. A method of coating a substrate using an aqueous coating composition according to any one of claims 1 to 8, comprising (a) application of the aqueous coating composition to a substrate and (b) removal of the water and any co-solvent.

12. A process for preparing an aqueous coating composition according to any one of claims 1 to 8 comprising the following steps:

a) reaction of components (i) to (vi) to form an isocyanate-terminated prepolymer (A);

b) forming an aqueous dispersion of the isocyanate-terminated prepolymer (A) in water;

c) optionally neutralising the isocyanate-terminated prepolymer (A) after and/or during step a) and/or step b).

d) chain extension of the isocyanate-terminated prepolymer (A) by reaction with the active-hydrogen chain extending compound (B); and

e) optionally adding crosslinker.